IN THE TITLE

Please amend the Title to read as follows:

METHOD OF TRANSFERRING INFORMATION BETWEEN
A TRANSMITTING ENTITY AND A RECEIVING ENTITY

REMARKS

1.) Claim Amendments

The Applicants have amended claims 2-4, 6, 8, 9, 12, 13, and 15; claims 1, 5, 7, 10, 11, and 14 have been canceled; claims 16-34 have been added. Accordingly, claims 2-4, 6, 8, 9, 12, 13, and 15-34 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

2.) In the Drawings

The Applicant discovered several typographical errors in FIGS. 7 and 8 where "MCS" was mistakenly written as "MSC". A corrected version of FIGS. 7 and 8 is enclosed showing the corrections marked in red. A replacement formal drawing of FIGS. 7 and 8 is also enclosed. The Examiner's approval of the drawing change is respectfully requested.

Formal drawings reflecting the previous amendment to add a "Prior Art" legend to FIGS. 1(a), 1(b), 2, 3, 4(a), 4(b), and 5(a) are also enclosed.

3.) In the Title

The Applicants have amended the Title to more closely conform to the claimed invention. The Examiner's approval of the amended Title is respectfully requested.

4.) Response to Arguments

In paragraph 3 of the Office Action, the Examiner stated that the Applicant's arguments have been fully considered, but they are not persuasive. The Examiner states:

> The applicant states Schramm discloses determinations are based on link quality and does not refer to indicating, based on receiver resources, a preferred operating mode. However, a quality level is measure in the receiver and requests for retransmission are requested. Since these actions take place in a receiver, they utilize "available resources of the receiving entity" as stated in the claims.

The Applicant notes that the Examiner has misread the claims. The claims have never recited that requests for retransmission are requested *utilizing* available resources of the receiving entity. Instead, a preferred operating mode is determined *based on* the available resources of the receiving entity. Thus, if the receiving entity has insufficient resources to support a particular operating mode, it is not preferred. The receiving entity then sends an indicator to the transmitting entity identifying a preferred mode for which the receiving entity has sufficient resources. The claims have been amended herein to further clarify this distinction from Schramm.

The Examiner further stated:

> The applicant also states Schramm doesn't discloses transmitting, over the reverse link, an indicator to said transmitting entity which indicates the preferred operating mode. Schramm requests one of a plurality of modulation schemes which are stored in the transmitting entity. This indicates the preferred operating mode. Please see column 6, lines 3-11.

Requesting a modulation scheme is not the same as indicating a preferred operating mode. The modulation scheme determines how the data blocks are encoded by the transmitter. The operating mode determines how the data blocks are transmitted, and how they are subsequently decoded by the receiver. The Applicant notes that the cited passage in column 6, lines 3-11 says absolutely nothing about the

receiving entity sending an indicator to the transmitting entity that indicates the preferred operating mode. The passage merely states that the transmitting entity may store FEC coded blocks, and if they need to be retransmitted, a different modulator can be used without having to repeat the FEC encoding.

The Applicant draws the Examiner's attention to Schramm, column 6, lines 60-67. In the example being discussed there, the mobile station is the receiving entity, and the radio base station (RBS) is the transmitting entity. Schramm merely states that when the mobile station determines that a received data block is erroneous, the mobile station requests the RBS to retransmit the data block. There is no disclosure whatsoever that the mobile station includes an indication of a preferred mode for the retransmission.

4.) Claim Rejections – 35 U.S.C. § 102(e)

The Examiner rejected claims 1-14 under 35 U.S.C. § 102(e) as being anticipated by Schramm, et al. (US 6,208,663). The Applicants have amended the claims to better distinguish the claimed invention from Schramm. The Examiner's consideration of the amended claims is respectfully requested.

Claim 1 has been canceled and rewritten as new claim 17. Claim 17 recites a method of transferring information between a transmitting entity and a receiving entity. The method includes the steps of encoding blocks of data utilizing an initial modulation/coding scheme (MCS), thereby generating encoded data blocks; generating from each of the encoded data blocks, at least one initial subblock of data, each initial subblock containing all or a subset of the bits of the encoded data block; and transmitting for each of the encoded data blocks, the initial subblocks of data from the transmitting entity to the receiving entity. The initial subblocks of data are received and stored at the receiving entity. The receiving entity then determines whether available resources of the receiving entity will support reception of additional redundant subblocks of data utilizing an incremental redundancy mode in which the additional redundant subblocks are repeatedly retransmitted to the receiving entity until the receiving entity successfully decodes the initial subblocks of data in a joint decoding process with the additional redundant subblocks. After determining whether available resources of the

receiving entity will support reception of additional redundant subblocks of data utilizing the incremental redundancy mode, a retransmission indicator is sent from the receiving entity to the transmitting entity indicating whether or not operation in the incremental redundancy mode is preferred. The incremental redundancy mode is preferred if the available resources of the receiving entity will support reception of additional redundant subblocks of data utilizing the incremental redundancy mode.

The steps of claim 17 clarify steps that were previously implied in claim 1. No new matter has been added. Schramm does not teach or suggest determining by the receiving entity, whether it has available resources to support retransmission of the undecodable data blocks utilizing the incremental redundancy mode. As noted above, Schramm also does not teach or suggest sending an indication from the receiving entity to the transmitting entity of a preferred mode for the retransmission. In particular, Schramm does not teach or suggest the receiving entity sending a retransmission indicator to the transmitting entity indicating that the incremental redundancy mode is the preferred mode for retransmitting additional redundant subblocks of data, upon determining that the available resources of the receiving entity will support retransmission utilizing the incremental redundancy mode. Schramm also fails to teach or suggest that if the available resources of the receiving entity will not support retransmission utilizing the incremental redundancy mode, the receiving entity sends a retransmission indicator to the transmitting entity indicating that the incremental redundancy mode is not the preferred mode for retransmitting the additional redundant subblocks of data.

Thus, several of the limitations recited in claim 17 are not taught or suggested by Schramm. Since these limitations were implicit in the original claim 1, no new issues have been raised by this amendment. In particular, the Applicants note that basis for the additional redundant subblocks of data now recited in claim 17 is found in the original specification in FIG. 3, which illustrates a data block and additional redundant subblocks R1 and R2. Therefore, the withdrawal of the rejection under § 102 and the allowance of claim 17 are respectfully requested.

Claims 2-4, 6, 8, 18, 19, and 34 depend from claim 17 and recite further limitations in combination with the novel elements of claim 17. Therefore, the allowance of claims 2-4, 6, 8, 18, 19, and 34 is respectfully requested.

Claim 9 has been amended to recite a method for transferring information between a transmitting entity and a receiving entity comprising the steps of identifying an initial MCS in a command sent from the receiving entity to the transmitting entity; transmitting initial blocks of data from the transmitting entity to the receiving entity utilizing the identified initial MCS; and sending a segmentation indicator from the receiving entity to the transmitting entity indicating whether retransmitted data blocks should be resegmented. The receiving entity then selects a retransmission MCS to be utilized by the transmitting entity for retransmitting the data blocks that the receiving entity could not decode. The initial MCS used for the initial transmission of the data blocks is selected if the segmentation indicator indicates that the retransmitted data blocks are not to be resegmented. If the segmentation indicator indicates that the retransmitted data blocks are to be resegmented, an MCS is selected that is at least as robust as the initial MCS used for the initial transmission of the data blocks. This is followed by sending the selected retransmission MCS from the receiving entity to the transmitting entity; and retransmitting, by the transmitting entity utilizing the selected MCS, the data blocks that the receiving entity could not decode. The retransmitted data blocks are resegmented or not resegmented in accordance with the segmentation indicator.

Thus, amended claim 9 recites the novel steps of sending a segmentation indicator from the receiving entity to the transmitting entity indicating whether retransmitted data blocks should be resegmented. Based on the segmentation indicator, the receiving entity also selects a retransmission MCS and sends it to the transmitting entity. The limitations recited in amended claim 9 are not taught or suggested by Schramm. Therefore, the allowance of amended claim 9 is respectfully requested.

Claims 13, 26, 27, and 30-32 depend from amended claim 9 and recite further limitations in combination with the novel elements of claim 9. Therefore, the allowance of claims 13, 26, 27, and 30-32 is respectfully requested.

5.) Claim Rejections – 35 U.S.C. § 103(a)

The Examiner rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Schramm, et al. (US 6,208,663) in view of Manning, et al. (US 5,781,533). The Applicants have amended claim 15 to better distinguish the claimed invention from Schramm and Manning. The Examiner's consideration of amended claim 15 is respectfully requested.

Claim 15 has been amended to recite a receiver comprising a memory for storing received initial data blocks; and a decoder for decoding received initial data blocks and determining whether any of the received initial data blocks cannot be decoded. The receiver also includes means for determining whether the receiver has sufficient resources available for the receiver to utilize an incremental redundancy operating mode to obtain additional redundant subblocks of data for additional attempts to decode the initial data blocks that could not be decoded. In the incremental redundancy operating mode, additional redundant subblocks of data associated with the initial data blocks that could not be decoded are repeatedly retransmitted to the receiver until the receiver successfully decodes the data blocks that could not be decoded. The receiver combines the additional redundant subblocks of data with the initial data blocks, and utilizes a joint decoding process. The receiver also includes means for transmitting a message to a transmitter indicating a preferred operating mode. The message indicates that the preferred operating mode is the incremental redundancy mode if the receiver has sufficient resources available to store and jointly decode the received initial data blocks as well as the additional redundant subblocks of data. Alternatively, the message indicates that the preferred operating mode is a non-incremental redundancy mode if the receiver does not have sufficient resources to utilize the incremental redundancy operating mode.

As noted above, Schramm does not teach or suggest sending a message from the receiving entity to the transmitting entity indicating a preferred mode for the retransmission. In particular, Schramm does not teach or suggest the receiving entity sending a message to the transmitting entity requesting the additional redundant subblocks to be retransmitted utilizing the incremental redundancy mode, if the

receiving entity has sufficient resources available to store and jointly decode both the received data blocks as well as data blocks that are retransmitted. Schramm also fails to teach or suggest the receiving entity sending a message to the transmitting entity requesting the additional redundant subblocks to be retransmitted utilizing a non-incremental redundancy mode, if the receiving entity does not have sufficient resources available to utilize the incremental redundancy mode.

Thus, several of the limitations recited in amended claim 15 are not taught or suggested by Schramm. In addition, these limitations are not taught or suggested by Manning, which discloses a device that merely stores received information in a buffer and transmits the status of the buffer via a transmitter. Therefore, the withdrawal of the rejection under § 103 and the allowance of amended claim 15 and dependent claim 16 are respectfully requested.

New claim 20 recites a method in a receiver for decoding received blocks of data. The method includes the steps of storing received initial data blocks in a memory; and determining whether the receiver has sufficient resources available for the receiver to utilize an incremental redundancy operating mode to obtain additional redundant subblocks of data. Upon determining that the receiver has sufficient resources available to utilize the incremental redundancy operating mode, the receiver sends a message to a transmitter indicating that the incremental redundancy operating mode is preferred. If the receiver does not have sufficient resources available to utilize the incremental redundancy operating mode, the receiver sends a message to the transmitter indicating that a non-incremental redundancy operating mode is preferred. Claim 20 includes several limitations not taught or suggested by Schramm or Manning. Therefore, the allowance of claim 20 and dependent claim 21 is respectfully requested.

New claim 22 recites a corresponding method in a transceiver for encoding blocks of data and transmitting the encoded data blocks to an external receiver. The method includes the steps of encoding blocks of data utilizing an initial MCS, thereby generating encoded data blocks; generating from each of the encoded data blocks, at least one initial subblock of data, each initial subblock containing all or a subset of the bits of the encoded data block; and transmitting for each of the encoded data blocks, the initial subblocks of data to the external receiver. This is followed by receiving a

message from the receiver indicating a preferred operating mode for transmitting additional redundant subblocks of data associated with data blocks that the receiver could not decode. The transmitter then encodes the additional redundant subblocks of data utilizing an MCS appropriate for the preferred operating mode indicated in the message from the receiver; and transmits the encoded additional redundant subblocks of data to the receiver utilizing the preferred operating mode.

Claim 22 includes several limitations not taught or suggested by Schramm or Manning. Therefore, the allowance of claim 22 and dependent claims 23-25 is respectfully requested.

New claim 28 recites a transceiver for encoding blocks of data and transmitting the encoded data blocks to an external receiver. The transceiver includes an encoder for encoding blocks of data utilizing an MCS selected from a plurality of MCSs that the encoder is capable of utilizing; means for generating from each of the encoded data blocks, at least one initial subblock of data, each initial subblock containing all or a subset of the bits of the encoded data block; and means for transmitting the initial subblocks of data to the external receiver, and if required, transmitting additional redundant subblocks of data to the receiver. The transceiver also includes means for receiving a message from the external receiver indicating a preferred operating mode for transmitting additional redundant subblocks of data associated with data blocks that the receiver could not decode. Means within the encoder then encode the additional redundant subblocks of data utilizing an MCS appropriate for the preferred operating mode indicated in the message from the receiver. The encoded additional redundant subblocks of data are provided to the transmitting means for transmission to the external receiver utilizing the preferred operating mode.

Claim 28 includes several limitations not taught or suggested by Schramm or Manning. Therefore, the allowance of claim 28 and dependent claim 29 is respectfully requested.

New claim 33 recites a method of transferring information between a transmitting entity and a receiving entity comprising the steps of identifying an initial MCS in a command sent from the receiving entity to the transmitting entity; encoding initial blocks of data utilizing the identified initial MCS; and transmitting the encoded initial blocks of

data from the transmitting entity to the receiving entity. The receiving entity then sends a segmentation indicator to the transmitting entity indicating whether data blocks that the receiving entity could not decode should be resegmented by the transmitting entity prior to retransmission to the receiving entity. The receiving entity also selects a retransmission MCS to be utilized by the transmitting entity for retransmitting the data blocks that the receiving entity could not decode, and sends the selected retransmission MCS to the transmitting entity. If the selected retransmission MCS is different from the initial MCS, the transmitting entity utilizes the selected retransmission MCS to re-encode the data blocks that the receiving entity could not decode. This is followed by retransmitting the re-encoded data blocks to the receiving entity, the retransmitted data blocks being resegmented or not resegmented in accordance with the segmentation indicator.

Claim 33 includes several limitations not taught or suggested by Schramm or Manning. Claim 12 depends from claim 33 and recites that the segmentation indicator and the retransmission MCS are sent from the receiving entity to the transmitting entity in a single message. Therefore, the allowance of claim 33 and dependent claim 12 is respectfully requested.

CONCLUSION

In view of the foregoing remarks, the Applicants believe all of the claims currently pending in the Application to be in a condition for allowance. The Applicants, therefore, respectfully request that the Examiner withdraw all rejections and issue a Notice of Allowance for claims 2-4, 6, 8, 9, 12, 13, and 15-34.

The Applicants request a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Amended Claims With Markings to Show Changes Made**".

Respectfully submitted,

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AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

Please amend claims 2-4, 6, 8, 9, 12, 13, and 15 as follows:

2. (Twice Amended) The method of claim [1] 17, further comprising [the step of: transmitting, with said] measuring, by the receiving entity, a quality level of a link between the transmitting entity and the receiving entity, and wherein the step of sending the retransmission indicator [over said reverse link,] includes sending from the receiving entity to the transmitting entity, at least one link quality [estimate based on a result of said quality level determining step] indicator indicating the quality level of the link.

3. (Amended) The method of claim [1] 18, [further comprising the step of:

transmitting, with said indicator over said reverse link, a modulation/coding scheme command] wherein the steps of selecting an MCS for encoding the additional subblocks are performed at the receiving entity, and the step of sending the retransmission indicator to the transmitting entity includes sending a selected MCS to the transmitting entity for encoding the additional subblocks of data.

4. (Amended) The method of claim [1] 18, [further comprising the step of:

selecting, at said transmitting entity, a modulation/coding scheme for transmitting subsequent data blocks on said forward link based on said indicator] wherein the steps of selecting an MCS for encoding the additional subblocks are performed at the transmitting entity based upon the retransmission indicator received from the receiving entity.

6. (Amended) The method of claim [2] 18, further comprising [the step of selecting, at said transmitting entity, a modulation/coding scheme for transmitting subsequent data blocks on said forward link based on said indicator and said link quality measurements] measuring, by the receiving entity, a quality level of a link between the transmitting entity and the receiving entity, and sending a link quality indicator to the transmitting entity, wherein the steps of selecting an MCS for encoding the additional

subblocks are performed at the transmitting entity and are based upon the retransmission indicator and the link quality indicator received from the receiving entity.

8. (Amended) The method of claim 3, wherein said transmitting entity [selects] encodes new data blocks utilizing a first [modulation/coding scheme] MCS [for new blocks] based on [said modulation/coding scheme command] the selected MCS received from the receiving entity, and encodes the additional redundant subblocks of data utilizing a second [modulation/coding scheme] MCS [for retransmitted blocks] based on [said indicator] the retransmission indicator.

9. (Twice Amended) A method [for] of transferring information [over a forward/reverse link pair] between a transmitting entity and a receiving entity comprising the steps of:

identifying an initial modulation/coding scheme (MCS) in a command sent from the receiving entity to the transmitting entity;

encoding initial blocks of data utilizing the identified initial MCS;

transmitting the encoded initial blocks of data from the transmitting entity to the receiving entity;

[determining, at said receiving entity, a preferred operating mode between link adaptation and incremental redundancy based on available resources of the receiving entity;]

[transmitting, over said reverse link,] sending [an] a segmentation indicator from the receiving entity to [said] the transmitting entity [which indicates the preferred operating mode] indicating whether data blocks that the receiving entity could not decode should be resegmented by the transmitting entity prior to retransmission to the receiving entity;

[transmitting, by said transmitting entity, an indicator associated with resegmentation of blocks to be retransmitted by said receiving entity;]

selecting by the transmitting entity, [a modulation/coding scheme, at said receiving entity,] a retransmission MCS to be utilized for retransmitting the data blocks that the receiving entity could not decode; [based on said indicator; and]

if the selected retransmission MCS is different from the initial MCS, re-encoding by the transmitting entity utilizing the selected retransmission MCS, the data blocks that the receiving entity could not decode; and

retransmitting[, by said] the re-encoded data blocks to the receiving entity, said retransmitted data blocks being resegmented or not resegmented in accordance with the segmentation indicator [over said reverse link using said selected modulation/coding scheme].

12. (Amended) The method of claim 33 [9, further comprising the step of: transmitting, with said indicator a modulation/coding scheme command] wherein the segmentation indicator and the retransmission MCS are sent from the receiving entity to the transmitting entity in a single message.

13. (Amended) The method of claim 9, [further comprising the step of: transmitting, with said] wherein the step of sending the segmentation indicator[,] includes sending at least one link quality measurement from the receiving entity to the transmitting entity.

15. (Twice Amended) A receiver comprising:

a memory for storing received initial data blocks;

a processor for processing received initial data blocks and determining whether any of the received initial data blocks cannot be decoded;

[a memory for storing received data blocks to be combined with retransmitted versions of said stored data blocks; and]

means for determining whether the memory has sufficient capacity available for the receiver to utilize an incremental redundancy operating mode to obtain additional redundant subblocks of data for additional attempts to decode the initial data blocks that could not be decoded, wherein, in the incremental redundancy operating mode, additional redundant subblocks of data associated with the initial data blocks that could not be decoded are repeatedly retransmitted to the receiver until the receiver successfully decodes the data blocks that could not be decoded, said receiver

combining the additional redundant subblocks of data with the initial data blocks, and utilizing a joint decoding process; and

means for transmitting a message to a transmitter indicating a preferred operating mode [between link adaptation and incremental redundancy based on a status of said memory], said message indicating that the preferred operating mode is the incremental redundancy mode if the memory has sufficient capacity, and indicating that the preferred operating mode is a non-incremental redundancy mode if the memory does not have sufficient capacity available to store the received initial data blocks as well as the additional redundant subblocks of data that are transmitted to the receiver utilizing the incremental redundancy operating mode.